

FIG. 1. Side View of a Grasshopper (Locust) with Thorax separated from the Head and Abdomen, and divided into three segments

NATURE STUDY OF ANIMALS.

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Collect grass-hoppers from fields and pastures and kill in a cyanide bottle or in a chloroform jar.

First notice that the grass-hopper is symmetrical about its long axis, i. e. the right and left sides of the body are alike. Are the dorsal and ventral sides alike?

As shown in Fig. 1 the body is divisible into three parts; head, thorax or chest, and abdomen. Find these parts in your specimen, and note further that the abdomen is made up of a number of rings or segments, called somites.

Many forms in the branch or phylum of animals to which the grass-hopper belongs, the jointed-legged animals, have a pair of appendages for every somite; the grass-hopper and other insects, however, are the exception, as their abdominal somites are free from appendages. While a somite may or may not have a pair of appendages, every pair of appendages represents a somite. Thus the thorax shows three pairs of legs, so we conclude that it is made up of three somites. These are shown separated from one another in Fig. 1.

Note the use of these legs, which are especially fitted for hopping?

How many pairs of wings has the grass-hopper? To which part, and to what particular segments are they attached?

Note that the two pairs differ somewhat in texture. How do they differ in use? When not flying the hind wings are folded up like a fan. Spread out one and note its shape, size, and veining. Compare it with the front wing. Compare the veining of these wings with that in the wing of the dragon fly.

The head seems to be one solid piece, in itself having little or no indication of somites, but the appendages, mouth parts and feelers, tell a different story. Note the mouth parts as given in Fig. 2, and find them in your specimen.

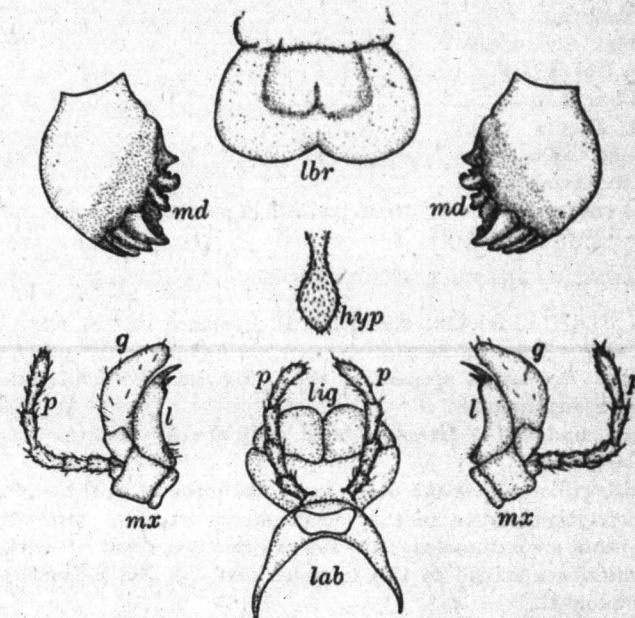


FIG. 2. Mouth-parts of a Grasshopper. Lbr. Upper Lip (Labrum); md, Jaws (Mandibles); lab, Lower Lip (Labium); p, palpus; g, Galea; l, Lacinia; lig, Ligula; hyp, Tongue (Hypopharynx).

The jaws are tooth-like pieces for biting, and move in a transverse plane. Compare this movement with the movement in the jaws of the cat or dog. The underjaws aid the jaws in mastication. That portion called the palpus resembles a small antenna, and like it is sensory.

The underlip is made up of two parts grown together in a median line. Note that the palpi of the underlips are similar in form and function to those of the under-jaws.

The tongue is in the mouth cavity, and is soft and fleshy in grass-hoppers.

The antennae or feelers project from the front